UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,184	09/10/2003	Yadong Li	138543	7486

7590 07/11/2007

Dean D. Small
Armstrong Teasdale LLP
Suite 2600
One Metropolitan Square
St. Louis, MO 63102

EXAMINER	
SMITH, JEFFREY S	
ART UNIT	**PAPER NUMBER**
2624	
MAIL DATE	**DELIVERY MODE**
07/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/659,184	LI ET AL.	
	Examiner	Art Unit	
	Jeffrey S. Smith	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 May 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6,7,9,14,24,26 and 27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6,7,9,14,24,26 and 27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 September 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed May 7, 2007 have been fully considered but they are not persuasive.

Applicant argues that the drawings show a speckle reduction filter in figure 1 and figure 6. Figure 1 shows a drawing of an ultrasound imaging system that is at least 10 years old. For example, figure 1 is identical to figure 1 of U.S. Patent Number 5,908,391 filed May 7, 1997. Figure 1 is also identical to the figure shown on the front page of U.S. Patent Number 5,827,189 filed December 30, 1996. Presumably neither of these patents disclose a speckle reduction filter according to the claimed invention. Figure 6 shows several boxes that contain CPU, scan converter, and memory. None of these boxes show or include a speckle reduction filter, or a speckle reduction filter program stored in the memory that is executed by a CPU to implement the speckle reduction filter. These figures need to be amended to show the speckle reduction filter of the claimed invention or need to be labeled as prior art as discussed in the objection to the drawings. Paragraphs 27 and 28 of the specification are not part of the drawings.

Applicant argues that figure 1 should not be labeled prior art. Applicant needs to either add the speckle reduction filter of the invention to this figure so that this drawing is not identical to drawings found in the prior art or label this figure as prior art as discussed in the objection to the drawings.

The objections to the drawings of figures 2-5 has been overcome.

The objections to the drawings for failing to show the elements of claims 5-14 has been overcome by canceling claims 5,8, and 10-13 and by new drawings 12-15 to show the elements of claims 6, 7, 9 and 14.

The objections to the drawings for failing to show the elements of claims 21-23 and 25 has been overcome by canceling these claims.

Applicant argues that the objection to the drawings for failing to show the elements of claim 24 should be withdrawn, because the scan converter and display controller that is configured to receive a processed data stream from the processor, divide the processed data stream into data subsets, simultaneously filter the data subsets by using a speckle reduction filter to produce filtered data subsets, and produce an image data stream based on the filtered data subsets is implemented in software stored in memory and executed by CPUs as shown in figure 6 and as described in paragraph 27. However, paragraph 27 is not part of the figures. Figure 6 merely shows boxes that contain either the word CPU, memory, or scan converter. The scan converter is not shown as a software program stored in the memory. The scan converter is further not shown as containing a software program that, when executed, causes the processing system to receive the data stream, divide it into subsets, simultaneously filter the subsets with a speckle reduction filter, and produce an image data stream. Figure 6 shows a scan converter but does not show a scan converter that includes a CPU with a single instruction-stream, multiple data-stream capability that simultaneously processes the data subsets. Figure 6 merely shows a conventional processing system that includes memory, CPUs, and a scan converter.

Applicant argues that the objections to the disclosure have been corrected. The objections to the disclosure are therefore withdrawn.

Applicant argues that the rejection to claim 24 as amended under 35 U.S.C. 112 first paragraph should be withdrawn, because one of ordinary skill in the art at the time of invention is capable of implementing a CPU with single instruction-stream multiple data-stream capability. This rejection is withdrawn because claim 24 as amended satisfies the requirements of 35 U.S.C. 112, first paragraph, for the reasons given by the applicant in the amendment mailed May 7, 2007.

Applicant argues that the rejection of claims 15-19 under 35 U.S.C. 101 has been overcome by canceling these claims. Also, applicant has added new claim 26 as a computer readable medium using language suggested in the previous Office action. For these reasons, the rejection under 35 U.S.C. 101 is overcome.

Applicant argues that claim 9 as amended is patentable over Abdel-Malek in view of Kamath because Abdel-Malek does not disclose nor suggest "optimizing the parameters based on an application." To support this argument, applicant refers to paragraph 32, which discusses that a liver image has more speckle noise than a vascular image. Therefore, the parameters for the liver image are optimized for providing greater smoothness, and the parameters for the vascular image are optimized to provide less smoothness. However, although optimizing the parameters for applications such as the amount of speckle noise in a liver image or a vascular image is discussed in paragraph 32, these applications are not recited in claim 9. The claim requires "optimizing the parameters based on an application." Abdel-Malek discloses

an application, which is the wavelet transformation, and optimizes the parameters based on the wavelet transformation application, as discussed in col. 6. See also column 2 line 60 through column 3 line 6, which discusses additional applications such as communication requirements and denoising techniques.

Applicant argues that claim 6 as amended is patentable over Abdel-Malek, Kamath, and Weisman. Claim 6 as amended recites "simultaneously co-displaying a first image and a second image on a common screen, wherein the first image is generated from the first image data stream, and wherein the second image is generated from the second image data stream, and further wherein the first image and the second image are speckle-reduced images using parameters of the first value set and parameters of the second value set, respectively." Applicant cites paragraph 35, which gives an example embodiment of a speckle reduced image that is displayed on one side of the screen. The speckle reduced image is spatially compounded, and this speckle reduced and spatially compounded image is displayed on the other side of the screen. However, this embodiment is not recited in the claim. The claim requires two speckle reduced images, generated using different sets of parameters, to be simultaneously co-displayed on a common screen. Weisman shows four images that are simultaneously co-displayed on a common screen, one of which is the raw image. The other three images are speckle reduced images that are generated from different sets of parameters and are simultaneously co-displayed on a common screen. The image next to the raw image is the speckle reduced image. The image under the raw image is generated from edge detection parameters applied to the speckle reduced image. The

image diagonal to the raw image is generated from color quantization parameters applied to the speckle reduced and edge detected image. Weisman therefore shows three speckle reduced images, generated using three different sets of parameters, that are simultaneously co-displayed on a common screen.

Applicant argues that claim 7 is patentable over Abdel-Malek, Kamath, and Weisman. Claim 7 recites "enabling a user to enter the dual display mode at least one of during a scan, while a replay of pre-recorded cine loops is displayed on a screen, and while a still image that is not updated periodically is displayed on a screen. Weisman in figure 6 shows a still image that is not updated periodically. The physician viewing figure 6 enters the quad display mode of figure 7 to perform further investigation. The quad display mode of figure 7 includes the dual display mode of claim 7.

Applicant argues that claim 14 is patentable over Grunwald, Abdel-Malek, and Kamath, because figures 6-11 and paragraphs 33-39 of Grunwald refer to separate modes of operation of the ultrasound system, not to image data streams. This argument is difficult to understand. The modes of operation of the ultrasound system generate image data streams as shown for example in figure 32 of Grunwald. The modes of operation can generate several image data streams that can be simultaneously co-displayed on a common screen as shown in figure 35 of Grunwald.

Claim 24 has been amended to recite a scan converter and display controller that includes a central processing unit with single instruction-stream multiple data-stream capability. Applicant argues that Kamath does not disclose a central processing unit with a single instruction-stream, multiple data-stream capability. However, it would have

been obvious to one of ordinary skill in the art at the time of invention to replace the parallel processors of Kamath with the central processing unit having single instruction-stream multiple data-stream capability of Le et al., "SIMD Processor Arrays for Image and Video Processing: A Review," which teaches that SIMD processor arrays are becoming popular for their fast parallel executions of video processing algorithms, because these algorithms map naturally onto the SIMD architecture (See Le, Introduction).

New claims 26 and 27, which are computer readable medium and apparatus claims corresponding to claim 6, are unpatentable for the reasons given with respect to claim 6.

Drawings

Figures 1 and 6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated, or amended to include the inventive features of the claims. Figure 1 shows a drawing of an ultrasound imaging system that is at least 10 years old. For example, figure 1 is identical to figure 1 of U.S. Patent Number 5,908,391 filed May 7, 1997. Figure 1 is also identical to the figure shown on the front page of U.S. Patent Number 5,827,189 filed December 30, 1996. Presumably neither of these patents disclose a speckle reduction filter according to the claimed invention. Figure 6 shows several boxes that contain CPU, scan converter, and memory. None of these boxes show or include a speckle reduction filter, or a speckle reduction filter program stored in the memory that is executed by a CPU to implement the speckle

reduction filter. These figures need to be amended to show the speckle reduction filter of the claimed invention or need to be labeled as prior art.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the speckle reduction filter of claims 24 and 27 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The drawings are objected to under 37 CFR 1.83(a) because they fail to show the details of the scan converter and display controller as described in the specification and as claimed in claim 24. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Based on applicant's arguments in the previous response, the scan converter and display controller of claim 24 should be shown (for example in figure 6) as a software program stored in the memory that, when executed, causes the processing system to receive the data stream, divide it into subsets, simultaneously filter the subsets with a speckle reduction filter, and produce an image data stream. A figure such as figure 6 should show the scan converter and display controller that includes a CPU with a single instruction-stream, multiple data-stream capability that simultaneously processes the data subsets. Figure 6 currently merely shows a conventional processing system that includes memory, CPUs, and a scan converter.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 5,619,998 issued to Abdel-Malek et al. ("Abdel-Malek") in view of U.S. Patent Number 6,879,729 issued to Kamath et al. ("Kamath").

For claim 9, Figure 2 of Abdel-Malek discloses receiving a processed data stream from a processor (data signal 30 from the receiver is processed from an analog

to a digital data stream), dividing the processed data stream into data subsets (subinterval divide 32), filtering the data subsets by using a speckle reduction filter to produce filtered data subsets (threshold processor 38), and producing an image data stream based on the filtered data subsets (scan converter 22).

Abdel-Malek does not disclose simultaneously filtering the data subsets.

Figure 7 of Kamath discloses dividing the processed data stream into data subsets (step 72 partitioning data into regions and distributing regions onto processors) and simultaneously filtering the data subsets (step 75 thresholding wavelet coefficients of transformed data).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the simultaneous filter of Kamath with the speckle noise filter of Abdel-Malek because Kamath provides the motivation at column 5 lines 3-7 of peforming "a substantial amount of processing on very large data sets," which can occur when "the data is in the form of images."

Abdel-Malek discloses the filtering step is based on adjustable parameters, the method further comprising: automatically, without user intervention, optimizing the parameters based on an application and a scan of an imaging system (see column 6, the thresholding factors are selected by automatic or manual control. Each factor (parameter) is selected (optimized) based on the input image data (scan) and the wavelet level (application of the imaging system) to perform the filtering).

Claims 6-7 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek and Kamath, and further in view of U.S. Patent Number 6,674,879 issued to Weisman et al. ("Weisman").

For claim 6, Figure 2 of Abdel-Malek discloses receiving a processed data stream from a processor (data signal 30 from the receiver is processed from an analog to a digital data stream), dividing the processed data stream into data subsets (subinterval divide 32), filtering the data subsets by using a speckle reduction filter to produce filtered data subsets (threshold processor 38), and producing an image data stream based on the filtered data subsets (scan converter 22).

Abdel-Malek does not disclose simultaneously filtering the data subsets.

Figure 7 of Kamath discloses dividing the processed data stream into data subsets (step 72 partitioning data into regions and distributing regions onto processors) and simultaneously filtering the data subsets (step 75 thresholding wavelet coefficients of transformed data).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the simultaneous filter of Kamath with the speckle noise filter of Abdel-Malek because Kamath provides the motivation at column 5 lines 3-7 of peforming "a substantial amount of processing on very large data sets," which can occur when "the data is in the form of images."

Weisman discloses changing values of the parameters between first and second value sets to form a first and second image data streams; and simultaneously co-displaying a first image and a second image on a common screen, wherein the first

image is generated from the first image data stream, and wherein the second image is generated from the second image data stream (see the filter and enhance buttons in figs. 5 and 7 and see col. 13 liens 2-4). The first image and the second image are speckle reduced images using parameters of the first value set and the second value set, respectively. Weisman shows four images that are simultaneously co-displayed on a common screen, one of which is the raw image. The other three images are speckle reduced images that are generated from different sets of parameters and are simultaneously co-displayed on a common screen. The image next to the raw image is the speckle reduced image. The image under the raw image is generated from edge detection parameters applied to the speckle reduced image. The image diagonal to the raw image is generated from color quantization parameters applied to the speckle reduced and edge detected image. Weisman therefore shows three speckle reduced images, generated using three different sets of parameters, that are simultaneously co-displayed on a common screen.

It would have been obvious to one of ordinary skill in this art at the time of the invention to include the simultaneous co-display of the filtered images with the speckle reduction filter of Abdel-Malek and Kamath for the benefit of providing report generation that improves the analysis of an ultrasound image at taught by Weisman in the abstract.

Claims 26 and 27, which are computer readable medium and apparatus claims having elements similar to claim 6, are rejected for these reasons also.

For claim 7, Figure 2 of Abdel-Malek discloses receiving a processed data stream from a processor (data signal 30 from the receiver is processed from an analog

to a digital data stream), dividing the processed data stream into data subsets (subinterval divide 32), filtering the data subsets by using a speckle reduction filter to produce filtered data subsets (threshold processor 38), and producing an image data stream based on the filtered data subsets (scan converter 22).

Abdel-Malek does not disclose simultaneously filtering the data subsets.

Figure 7 of Kamath discloses dividing the processed data stream into data subsets (step 72 partitioning data into regions and distributing regions onto processors) and simultaneously filtering the data subsets (step 75 thresholding wavelet coefficients of transformed data).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the simultaneous filter of Kamath with the speckle noise filter of Abdel-Malek because Kamath provides the motivation at column 5 lines 3-7 of peforming "a substantial amount of processing on very large data sets," which can occur when "the data is in the form of images."

Weisman discloses simultaneously co-displaying, in a dual display mode, a filtered image and an original unfiltered image on a common screen, wherein the filtered and the original unfiltered images are reconstructed from a data set that includes the image data stream and the processed data stream; and enabling a user to enter the dual display mode at least one of during a scan, while a replay of pre-recorded cine loops is displayed on a screen, and while a still image that is not updated periodically is displayed on the screen (see column 6 lines 54-67). Weisman in figure 6 shows a still image that is not updated periodically. The physician viewing figure 6 enters the quad

display mode of figure 7 to perform further investigation. The quad display mode of figure 7 includes the dual display mode of claim 7.

It would have been obvious to one of ordinary skill in this art at the time of the invention to enable the user to enter the dual display mode for the simultaneous co-display of the images of Abdel-Malek and Kamath for the benefit of providing report generation that improves the analysis of an ultrasound image at taught by Weisman in the abstract.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Number 10/081,542 by Grunwald et al., published January 16, 2003 ("Grunwald") in view of Abdel-Malek and further in view of Kamath.

Grunwald discloses receiving beams from a beamformer (110 as shown in fig. 1); frequency compounding the beams to obtain a filtered image data stream (732 as shown in fig. 7, see also fig. 32); producing a second image data stream based on the filtered data (see flash suppression modes 834 and 932 of figs. 8 and 9, see also filter modes 1026 and 1120 of figs. 10 and 11); and simultaneously co-displaying a filtered image and a second image on a common screen, wherein the filtered image is generated from the filtered image data stream and the second image is generated from the second image data stream (see fig. 35, image area 3504 and image area 3508, the "screen can be tiled to view two image areas simultaneously," so when one image is frequency compounded, and another is filtered, the compounded and filtered images can be viewed at the same time).

Grunwald does not disclose receiving a processed data stream from a processor; dividing the processed data stream into data subsets; simultaneously filtering the data subsets by using a speckle reduction filter to produce filtered data subsets;

Figure 2 of Abdel-Malek discloses receiving a processed data stream from a processor (data signal 30 from the receiver is processed from an analog to a digital data stream), dividing the processed data stream into data subsets (subinterval divide 32), filtering the data subsets by using a speckle reduction filter to produce filtered data subsets (threshold processor 38), and producing an image data stream based on the filtered data subsets (scan converter 22).

It would have been obvious to one of ordinary skill in this art at the time of invention to use the speckle noise filter of Abdel-Malek as one of the flash suppression modes or filter modes of Grunwald for the benefit of enhancing the resultant image by improving the signal to noise ratio. The filter of Abdel-Malek can be added to existing ultrasound equipment, as taught by Abdel-Malek at column 2 lines 25-34.

Abdel-Malek does not disclose simultaneously filtering the data subsets.

Figure 7 of Kamath discloses dividing the processed data stream into data subsets (step 72 partitioning data into regions and distributing regions onto processors) and simultaneously filtering the data subsets (step 75 thresholding wavelet coefficients of transformed data).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the simultaneous filter of Kamath with the speckle noise filter of Abdel-Malek because Kamath provides the motivation at column 5 lines 3-7 of

peforming "a substantial amount of processing on very large data sets," which can occur when "the data is in the form of images."

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek in view of Kamath and further in view of Le et al., "SIMD Processor Arrays for Image and Video Processing: A Review," cited by applicant in the information disclosure statement ("Le").

Figure 1 of Abdel-Malek discloses a transducer array 2, a beamformer (1, 8), a processor (14, 16), a scan converter (22), and a display controller (12, 18) configured to use a speckle reduction filter as shown in Figure 2.

Figure 2 of Abdel-Malek discloses receiving a processed data stream from a processor (data signal 30 from the receiver is processed from an analog to a digital data stream), dividing the processed data stream into data subsets (subinterval divide 32), filtering the data subsets by using a speckle reduction filter to produce filtered data subsets (threshold processor 38), and producing an image data stream based on the filtered data subsets (scan converter 22).

Abdel-Malek does not disclose simultaneously filtering the data subsets.

Figure 7 of Kamath discloses dividing the processed data stream into data subsets (step 72 partitioning data into regions and distributing regions onto processors) and simultaneously filtering the data subsets (step 75 thresholding wavelet coefficients of transformed data). Kamath also discloses a computer programmed to perform the process (see column 5 lines 8-23 for example).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the simultaneous filter of Kamath with the speckle noise filter of Abdel-Malek because Kamath provides the motivation at column 5 lines 3-7 of peforming "a substantial amount of processing on very large data sets," which can occur when "the data is in the form of images."

Kamath discloses a device that includes more than one central processing unit (CPU), wherein each CPU simultaneously processes a data subset of the image data stream (see fig. 3).

Le discloses a central processing unit that has single instruction-stream multiple data-stream capability (abstract).

It would have been obvious to one of ordinary skill in the art at the time of invention to replace the parallel processors of Kamath with the central processing unit having single instruction-stream multiple data-stream capability of Le, which teaches that SIMD processor arrays are becoming popular for their fast parallel executions of video processing algorithms, because these algorithms map naturally onto the SIMD architecture (See Le, Introduction).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey S. Smith whose telephone number is 571 270-1235. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSS
June 11, 2007

JINGGE WU
SUPERVISORY PATENT EXAMINER